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**Effect of trap shape on imbalanced fermi superfluids**[1] MASAKI TEZUKA, Kyoto University, YOICHI YANASE, Niigata University, MASAHITO UEDA, University of Tokyo — By solving the Bogoliubov-de Gennes equations with coupling-constant renormalization appropriate for an elongated trapped system with a chemical potential difference, we show that the maximum population imbalance ratio for condensation to occur, $P_{\rm CC}$, does not increase with the trap aspect ratio $\lambda$. This is also confirmed by our simulation based on the real-space self-consistent $T$-matrix approximation (RSTA). Moreover, while the deformation of the cloud shape from that expected from the trap shape increases, it stays minor for extreme values of $\lambda$. This finding indicates that, despite the apparent discrepancy between the MIT and Rice experiments over the value of $P_{\rm CC}$ and the breakdown of local density approximation, the equilibrium state of the system for the aspect ratio in the Rice experiment would be closer to that of MIT.

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